

BULLETIN

OF THE INSTITUTE OF METALS

VOLUME I

NOVEMBER 1951

PART 3

PERSONAL NOTES

PROFESSOR J. H. ANDREW has been made an Honorary Vice-President of the Iron and Steel Institute.

DR. BANI R. BANERJEE has been appointed a Research Metallurgist in the Engineering Research Department of the Standard Oil Co., Chicago.

MR. M. W. BARLOW has resigned his position as Sales Manager of British Electro Metallurgical Co., Ltd., Sheffield, to join Foundry Services, Ltd., Birmingham, as Manager of their newly established Ferro Alloy Division.

MR. E. H. BUCKNALL, of The Mond Nickel Co., Ltd., has recently spent some time in Washington as one of the British members of the Joint Sub-Committee (of the International Materials Conference) on Utilization of Manganese, Nickel, Cobalt, Tungsten, and Molybdenum. Mr. Bucknall was Chairman of the Group that drafted the Sub-Committee's report.

MR. R. BUTLER has left the B.S.A. Group Research Centre, Sheffield, and is now in the Research Department of The Birmingham Small Arms Co., Ltd., Small Heath, Birmingham II.

MR. R. CADEN has been appointed Officer in Charge, Metallurgical Laboratory, Engineering Department, H.M. Dockyard, Rosyth, Scotland.

MR. A. CROSBY has been awarded the B.Sc. degree of London University, with 2nd class Honours in Metallurgy.

MR. J. K. DAVIES has recently left Magnesium Elektron, Ltd., and taken a post in the Experimental Department of The British Aluminium Co., Ltd., Falkirk.

DR. D. W. DAVISON has joined the staff of T. S. Skillman and Co. Pty., Ltd., North Sydney, N.S.W.

MR. A. P. GREENOUGH has left the Royal Aircraft Establishment, Farnborough, to take up an appointment as Assistant Lecturer in Metallurgy at the University College, Swansea. He was recently awarded the M.A. degree of Cambridge University.

MR. E. G. HALL is an Assistant Experimental Officer at the Armament Research Establishment, Woolwich, S.E.18.

MR. VERNON HARBORD has been elected President of the Institution of Mining and Metallurgy for the year 1952-53 and will take office at the Annual General Meeting to be held on 15 May 1952. He is a member of the well-known firm of consulting metallurgists Messrs. Riley, Harbord, and Law.

MR. D. W. HOPKINS has resigned his lecturership in the University College of Swansea to become Works Manager of Western Metallurgical Industries, Ltd., Neath, Glam.

DR. HSUN HU has completed his studies at Notre Dame University, and is now engaged as a metallurgist at the Institute for the Study of Metals, Chicago.

MR. FREDERICK JACKSON is now a metallurgist in the Newark Works of Kaiser Aluminum and Chemical Corp., at Newark, O., U.S.A.

MR. S. R. A. LANGFORD has left James Booth and Co., Ltd., and is now a metallurgist with J. Stone and Co. (Charlton), Ltd.

MR. W. J. LEE-BIRD has been appointed a metallurgist with Smiths Stamping Works, Ltd., Coventry.

MR. S. E. MILLS has graduated B.Met. at Sheffield University and is now metallurgist to the Bifurcated and Tubular Rivet Co., Ltd., Aylesbury, Bucks.

MR. R. N. PARKINS has recently been awarded the Ph.D. degree of the University of Durham.

MR. E. R. PERRY has taken up an appointment in the Metallurgy Group of the Research Laboratories of the General Electric Co., Ltd., Wembley.

MR. S. F. PUGH has been appointed a Senior Scientific Officer in the Metallurgy Division of the Atomic Energy Research Establishment, Harwell.

DR. W. I. PUMPHREY, having returned from his visit to the United States as a Commonwealth Fellow, has been appointed Research Manager to Murex Welding Processes, Ltd., Waltham Cross, Herts.

MR. R. W. ROBINSON has now left the Central Metallurgical Laboratory, Emsworth, and has taken up a new Admiralty appointment in H.M. Dockyard, Devonport.

MR. B. G. STREET has been awarded the Ph.D. degree of Liverpool University and has been appointed an assistant lecturer in the Metallurgy Department of that University.

MR. J. R. THEOBALD is on a training course in production technology for about a year in the United States.

MR. J. S. THOMPSON has been appointed Chief Metallurgist to Durham Chemicals, Ltd., Birtley, Co. Durham.

MR. D. K. WORN has left the Research Laboratories of the General Electric Co., Ltd., Wembley, to take up an appointment in the Metallurgy Department, Nelson Research Laboratories, The English Electric Co., Ltd., Stafford.

JOINT ACTIVITIES

Obituary

The Editor regrets to announce the death of:

MR. ALFRED ALLCOCK, Chairman and Governing Director of Allcock and Co. (Metals), Ltd., Hockley Hill, Birmingham, on 20 September. Mr. Allcock was also Chairman of Barr Street Castings, Ltd., Birmingham, and a Founder Member and later President of the British Bronze and Brass Ingot Manufacturers' Association. He had been a member of the Institute since 1928.

JOINT ACTIVITIES

Beilby Memorial Awards

From the interest derived from the invested capital of the Sir George Beilby Memorial Fund, at intervals to be determined by the Administrators representing the Royal Institute of Chemistry, the Society of Chemical Industry, and the Institute of Metals, awards are made to British investigators in science to mark appreciation of records of distinguished work. Preference is given to investigations relating to the special interests of Sir George Beilby, including problems connected with fuel economy, chemical engineering, and metallurgy, and awards are made, not on the result of any competition, but in recognition of continuous work of exceptional merit, bearing evidence of distinct advancement in science and practice.

In general, awards are not applicable to workers of established repute, but are granted as an encouragement to younger men who have done original independent work of exceptional merit over a period of years.

The Administrators are empowered to make more than one award in a given year if work of sufficient merit by several candidates is brought to their notice. In 1950 two awards, each of one hundred guineas, were made to Mr. W. A. Baker and Dr. G. Whittingham.

Consideration will be given to the making of an award or awards from the Fund early in 1952, and the Administrators will therefore be glad to have their attention drawn to outstanding work of the nature indicated, not later than 31 December 1951.

All communications on this subject should be addressed to the Convener of the Administrators, Sir George Beilby Memorial Fund, Royal Institute of Chemistry, 30 Russell Square, London, W.C.1.

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

Manchester Metallurgical Society

OFFICERS FOR 1951-52

President: A. B. Ashton, M.Sc., F.I.M.

Ex-President: E. J. Heeley, Assoc. Met., F.I.M.

Vice-Presidents: H. Allison, B.Sc. Tech., F.I.M.; W. B. Wragge, B.Sc. Tech., A.R.I.C.; J. D. Hannah, M.Sc., F.I.M.

Council: R. S. Brown, M.B.E., F.I.M.; C. J. Bushrod, M.Sc.; G. A. Cottell, M.Sc., A.I.M.; E. Holland, B.Sc., A.I.M.; K. M. Entwistle, M.Sc., Ph.D.; E. L. Francis, M.Sc.; F. H. Poole, A.M.C.T.; R. Wallace; W. H. N. Whyman, B.Sc.

Hon. Secretary: J. A. Tod, B.Sc., F.I.M.

Hon. Treasurer: N. Youatt, A.M.I.Mech.E.

OTHER NEWS

Corrosion of Buried Metals

A new standard form for recording corrosion failures of buried pipes has been prepared by the British Iron and Steel Research Association's Sub-Committee on the Corrosion of Buried Metals. It is available from Mr. E. E. White, B.I.S.R.A., 140 Battersea Park Road, London, S.W.11, and is to be returned when completed to the Chemical Research Laboratory of the D.S.I.R., Teddington. The Sub-Committee has taken over from the Research Co-ordination Committee of the Institution of Water Engineers its work on the corrosion of buried pipe-lines, and the new form incorporates the changes which the Institution's experience has shown to be desirable.

The seriousness of the problem of underground corrosion, which has been estimated to cost the country £5,000,000 per year, was recognized in the report of the Ministry of Health's Departmental Committee last year, where the importance of full and accurate records being kept of all cases of underground corrosion was emphasized. The B.I.S.R.A. Sub-Committee, under the chairmanship of Mr. L. C. Whiskin of the Metropolitan Water Board and representing the Institution of Water Engineers, is now responsible for the work formerly carried out by the Departmental Committee. It is hoped that the new form will be widely used to report new cases of underground corrosion, especially in pipes laid since 1920.

International Congress on Analytical Chemistry

Some further details are now available concerning the arrangements for the International Congress on Analytical Chemistry which is to be held in this country next year.

The Congress will meet at Oxford during the period 4-9 September 1952, and the scientific sessions will be held in the rooms of the "Examinations Schools".

Three main Congress Lectures by eminent chemists have been arranged and the programme for the scientific sessions has been divided on a basis of broad techniques.

Papers will be issued in pre-print form before the meeting, and the contributors will give only a brief summary of their papers, most of the time being given over to discussion. Arrangements have been made to publish the whole of the proceedings in a special number, or numbers, of the *Analyst*, as soon as possible after the Congress.

During the period of the Congress it is proposed to have in operation working demonstrations illustrating new techniques or special applications of older techniques in analytical chemistry. In addition to this, and quite separate from it, there will be a trade exhibition comprising apparatus and books.

Some visits have been planned, and at the week-end a number of excursions to places of interest will be arranged.

The Honorary Secretary of the Congress is Mr. R. C. Chirside, F.R.I.C., Research Laboratories, The General Electric Co., Ltd., Wembley, Middlesex.

Report on Brassfounding

The Brassfounding Productivity Team that visited the United States last year has recently published its report. Copies may be obtained from the Anglo-American Council on Productivity, 21 Tothill Street, London, S.W.1, or the Association of Bronze and Brass Founders, 25 Bennett's Hill, Birmingham 2, price 7s. 6d., post free.

DIARY

Local Section Meetings

- 6 November. Oxford. "The Casting of Light Metals", by A. N. Turner and R. W. Gilkes. (Meeting place to be announced later. At 7 p.m.)
- 6 November. South Wales. "Pressing and Sintering of Metal Powders", by Dr. J. C. Chaston. (Metallurgy Department, University College, Singleton Park, Swansea, at 6.30 p.m.)
- 8 November. London. "Transformations in Metals", by Professor C. S. Barrett. (The Royal School of Mines, South Kensington, S.W.7, at 7 p.m.)
- 12 November. Scottish. "Metals for Gas Turbines", by Dr. J. M. Robertson. (39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)
- 22 November. Birmingham. "Metal Economics", by Professor A. J. Murphy. (James Watt Memorial Institute, Great Charles Street, Birmingham, at 6.30 p.m.)
- 23 November. London. Annual Dance. (4 Grosvenor Gardens, London, S.W.1.)

Other Societies

- 1 November. Leeds Metallurgical Society. "Some Structural Aspects of Recrystallization", by R. Eborall. (Chemistry Department, The University, Leeds 2, at 7 p.m.)
- 2 November. Institution of Mechanical Engineers. "Some Factors Affecting Wear on Cemented Carbide Tools", by Dr. E. M. Trent. (Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m.)
- 6 November. Institution of Engineers and Shipbuilders in Scotland. "Some Aspects of Research in Friction and Wear", by Dr. F. T. Barwell. (39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)
- 6 November. Institution of Production Engineers, Halifax Branch. "The Production of Steel and Bronze Castings for Engineering Purposes", by G. L. Hancock. (The George Hotel, Huddersfield, at 7.15 p.m.)
- 7 November. Institution of Production Engineers, Nottingham Branch. "The Lost-Wax Process", by A. Short. (Victoria Station Hotel, Milton Street, Nottingham, at 7 p.m.)
- 7 November. Manchester Metallurgical Society. "What is a Dislocation?" by Dr. B. A. Bilby. (Engineers' Club, Albert Square, Manchester, at 6.30 p.m.)
- 9 November. Liverpool Metallurgical Society. "What is a Dislocation?" by Dr. B. A. Bilby. (Lecture Theatre, Electricity Service Centre, Whitechapel, Liverpool, at 7 p.m.)
- 13 November. Institution of Works Managers, Birmingham Branch. "Some Impressions Relative to Works Management Obtained as Leader of the British Non-Ferrous Metals Anglo-American Productivity Council Team", by W. F. Brazener. (The Grand Hotel, Birmingham, at 7 p.m.)
- 13 November. Liverpool Metallurgical Society. "Welding Metallurgy", by Professor E. C. Rollason. Joint meeting with the Liverpool and District Branch, Institute of Welding. (City Technical College, Byrom Street, Liverpool, at 7 p.m.)

- 14 November. Institute of Welding, West of Scotland Branch. "Argon-Arc Welding", by W. A. Woolcot. (39 Elmbank Crescent, Glasgow, C.2, at 7 p.m.)
- 15 November. Institution of Mining and Metallurgy. General Meeting. (Geological Society, Burlington House, Piccadilly, London, W.1, at 5 p.m.)
- 20 November. Institute of British Foundrymen, East Anglian Branch. "Core-Blower Applications and Operations", by G. W. Fairfield. (Public Library, Ipswich, at 7 p.m.)
- 21 November. Institute of British Foundrymen, London Branch. "Problems—Recruitment and Apprentices", by A. Talbot. (Waldorf Hotel, Aldwych, London, W.C.2, at 7.30 p.m.)
- 21 November. Institute of British Foundrymen, North-East Scottish Section. "Foundry Sand Control Technique", by W. Y. Buchanan. (Imperial Hotel, Arbroath, at 7.30 p.m.)
- 21 November. Manchester Metallurgical Society. "Spectrographic Analysis", by W. Ramsden. (Engineers' Club, Albert Square, Manchester, at 6.30 p.m.)
- 21–22 November. Iron and Steel Institute. Autumn General Meeting.

APPOINTMENTS VACANT

CHEMIST, recently graduated, wanted for work in connection with the control and development of works processes by manufacturers of Aluminium Sheet, Extrusions, and Paste. The Chemist's work would involve both organic and inorganic chemistry. Box No. 310, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

METALLURGICAL CHEMIST. A rapidly expanding organization in the East Midlands requires a metallurgical chemist to undertake a variety of analytical work in the ferrous and non-ferrous fields. A knowledge of the properties and analysis of oils and greases would be an advantage. The nature of the post demands that only applicants who can work on their own initiative and take responsibility need apply. Full details of experience and present salary to Box No. 313, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

METALLURGIST required with experience in metallography for Propeller Laboratory. Applicants should be Licentiate Members of the Institution of Metallurgists or should possess equivalent qualifications. Salary according to age, qualifications, and experience. Write giving details of qualifications, experience, age, and salary sought, to Box 311, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

PHYSICIST required by the Division of Atomic Energy (Production), Risley, to supervise research work connected with the mechanical properties of metals and alloys, including creep, fatigue, corrosion-fatigue, and stress-corrosion, and to be responsible for the interpretation of results according to modern physical conceptions. A large proportion of the work will be fundamental in nature.

Candidates must have a first or second class honours degree in physics or engineering or equivalent qualification. They should be at least 26 years old and have had not less than three years' experience in this type of research.

Salary will be assessed according to qualifications and experience within the range £720–910 p.a. Rates for women are somewhat lower. The post will carry F.S.S.U. benefits. Applications to Ministry of Supply, D.At.En. (P), Risley, Nr. Warrington, Lancs., stating post applied for.

RESEARCH ESTABLISHMENT in the Midlands requires a senior investigator to take charge of research on the welding of light alloys. Candidates should possess a good honours degree and research experience on welding. Box 312, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

NOTICE TO AUTHORS OF PAPERS FOR THE "JOURNAL" AND CONTRIBUTORS TO DISCUSSIONS

1. **Papers will be considered for publication from non-members as well as members of the Institute.** They are accepted for publication in the *Journal* and not necessarily for presentation at any meeting of the Institute. MSS. should be addressed to The Editor of Publications, The Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

2. **Papers suitable for publication** may be classified as:

(a) Papers recording the results of original research.

(b) First-class reviews of, or accounts of progress in, a particular field.

(c) Papers descriptive of works methods, or recent developments in metallurgical plant and practice.

(d) Papers in classes (a), (b), and (c) above, previously published in languages other than English, French, German, or Italian, if of sufficient merit.

3. **Manuscripts and illustrations** should be submitted in duplicate. MSS. must be typewritten (*double-line spacing*) on one side of the paper only, and authors are requested to sign a declaration that neither the paper nor a substantial part thereof has been published elsewhere. Exceptions may be made in certain cases where a paper has been published in a language other than English, French, German, or Italian (see 2(d) above). MSS. not accepted are normally returned within 6 months of receipt.

In the interests of economy, all papers must be written as concisely as possible; in general, internal research reports are not in suitable form for publication as papers in the *Journal*. All but the simplest mathematical expressions should be written by hand, with capital and small letters clearly distinguished. Superscript and subscript letters should also be plainly indicated. Greek letters and special signs should be identified in the margin. For style, spelling, and abbreviations used, any recent issue of the *Journal* may be consulted.

4. **Synopsis.** Every paper must have a synopsis (not exceeding 250 words in length) which, in the case of a paper reporting original research, should state its objects, the ground covered, and the nature of the results. The synopsis will appear at the beginning of the paper, and should be in a form suitable for use by abstracting organizations. Extracts from a "Guide for the Preparation of Synopses" drawn up by the Abstracting Services Consultative Committee are reproduced below.

5. **References** must be collected at the end of the paper and must be numbered in the order in which they occur in the MS. Initials of authors must be given, and the Institute's official abbreviations for periodical titles (as used in *Metallurgical Abstracts*) should be employed, where known. References to papers should be set out in the style:

A. L. Dighton and H. A. Miley, *Trans. Electrochem. Soc.*, 1942, 81, 321 (i.e. year, volume, page).

References to books should be in the following style:

C. Zener, "Elasticity and Anelasticity of Metals". Chicago: 1948 (University of Chicago Press).

6. **Illustrations.** Each illustration must have a number and description; only one set of numbers must be used in one paper, and it is desirable to number the half-tone illustrations consecutively, rather than to intersperse them with the line figures. The captions should be typed on a separate sheet.

The set of **line figures** sent for reproduction must be drawn (about twice the size to appear in the *Journal*) in Indian ink on smooth white Bristol board, good-quality drawing paper, co-ordinate paper, or tracing cloth, which are preferred in the order given. Co-ordinate paper, if used, must be blue-lined, with the co-ordinates to be reproduced finely drawn in Indian ink. Curves should be drawn boldly (i.e. at least twice the thickness of the frame). Experimental points should be indicated by open or closed circles, triangles, squares, &c. (preferably not crosses). Curves should be broken on each side of such symbols and plenty of allowance should be made for closing up in blockmaking. All lettering and numerals, &c., should preferably be in *pencil*, so that the Institute's standard lettering may be affixed, and ample margins must be left outside the framework of the figures to enable this to be done. The second set of line illustrations may be photostat copies.

Photographs must be restricted in number, owing to the expense of reproduction, and photomicrographs should be trimmed to the smallest possible of the following sizes consistent with adequate representation of the subject: 4 in. deep by 3 in. wide: 2 in. deep by 3 in. wide: 2 in. square. Magnifications of photomicrographs must be given in each case. Photographs for reproduction should be loose, not pasted down (and not fastened together with a clip, which damages them), and the figure number and author's name should be written on the back of each. Captions should be given to the photomicrographs, but these should be kept as brief as possible.

Because of the present high cost of printing and paper it is imperative that authors restrict illustrations (particularly photographs) to the absolute minimum deemed necessary to support their argument. Only in exceptional cases will illustrations be reproduced if already printed and readily available elsewhere.

7. **Tables or Diagrams.** Results of experiments, &c., may be given in the form of tables or figures, *but* (unless there are exceptional reasons) *not both*. Tables should bear Roman numbers, and each should have a heading that will make the data intelligible without reference to the text.

8. **Corrections.** A certain number of corrections in proof are inevitable, but any modification of the original text is to be avoided. Since corrections are very expensive, the Institute reserves the right to require authors to contribute towards their cost if the Editor deems them to be excessive. The Institute also reserves the right to require a contribution to the cost of remaking any block where this is necessitated by an error on the author's part.

9. **Reprints.** Individual authors are presented with a maximum of 25, and two or more authors with a maximum of 50 reprints from the *Journal*, without covers. Limited numbers of additional reprints can be supplied at the author's expense, if ordered before proofs are passed for press. (Orders should preferably be placed when submitting MSS.)

10. **Discussion.** Except in the case of special symposia, shorthand records of discussions are not taken at meetings. Written discussion may be submitted on any paper, preferably typewritten (*double-line spacing*). References should be given in the form of footnotes. Paragraphs 6 and 7 above are also applicable to such contributions. Reprints of discussion cannot be supplied to contributors.

GUIDE FOR THE PREPARATION OF SYNOPSSES

(As recommended by the Abstracting Services Consultative Committee)

1. **Purpose.** The synopsis is not part of the paper; it is intended to convey briefly the content of the paper, to draw attention to all new information, and to the main conclusions. It should be factual.

2. **Style of writing.** The synopsis should be written concisely and in normal rather than abbreviated English. It is preferable to use the third person. Where possible use standard rather than proprietary terms, and avoid unnecessary contracting.

It should be presumed that the reader has some knowledge of the subject, but has not read the paper. The synopsis should therefore be intelligible in itself without reference to the paper; for example, it should not cite sections or illustrations by their numerical references in the text.

3. **Content.** The title of the paper is usually read as part of the synopsis. The opening sentence should be framed accordingly and repetition of the title avoided. If the title is insufficiently comprehensive, the opening should indicate the subjects covered. Usually the beginning of a synopsis should state the objective of the investigation.

It is sometimes valuable to indicate the treatment of the subject by such words as: brief, exhaustive, theoretical, &c.

The synopsis should indicate newly observed facts, conclusions of an

experiment or argument and, if possible, the essential parts of any new theory, treatment, apparatus, technique, &c.

It should contain the names of any new compound, mineral species, &c., and any new numerical data, such as physical constants; if this is not possible, it should draw attention to them. It is important to refer to new items and observations, even though some are incidental to the main purpose of the paper; such information may otherwise be hidden, though it is often very useful.

When giving experimental results the synopsis should indicate the methods used; for new methods the basic principle, range of operation, and degree of accuracy should be given.

4. **References.** If it is necessary to refer to earlier work in the summary, the reference should always be given in full and not by number. Otherwise references should be left out.

When a synopsis is completed, the author is urged to revise it carefully, removing redundant words, clarifying obscurities, and rectifying errors in copying from the paper. Particular attention should be paid by him to scientific and proper names, numerical data, and chemical and mathematical formulae.